# Theory

## Chapter 14 – Protection

### Is Protection the same as Security?

Security broader meaning:

- Security needs Protection is an internal control mechanism: Protection ineffective when user authentication is compromised.

- Security also must consider external environment: Compromised user authentication, malicious alterations by viruses, worms, Denial-of-Service.

### What is the model of protection?

Access Matrix: Access List, Capability List, Access Rights.

- Rows: Represent Domains.

- Columns: Represent Objects.

- Entry: is a set of Access Rights.

### What is Key Principle of Protection?

Principle of Least Privilege: Programs, users, and systems be given just

enough privileges to perform their tasks

### What is a domain?

Includes User, Process, Procedure, OS Dual Mode.

### What is difference of RBAC and Access Matrix?

In RBAC, users are assigned to Roles, not Objects.

### Who can create roles in RBAC – Solaris Env?

Superuser.

### What are issues of Revocation of Access Rights?

- Immediate Versus Delay, Selective Users or All, Partial Access Rights or All, Permanently or Temporarily.

### Which component provide protection in language-based protection?

Programming language implementation.

### Protection by Kernel (OS) vs Language Based?

Kernel (OS): greater degree of security, but not very flexible.

Language-based: coding error is security risk, but is flexible and can be extended or replaced.

### Compiler-Based Enforcement vs Language-Based Protection?

Limit the storage reference of the code by compiler.

## Chapter 15 – Security

### What is the key security enabler?

Encryption.

### Difference between Virus & Trojan Horse?

Trojan Horse does **not** replicate, while Virus does.

### Why Windows has more virus?

- Windows is more popular, and Windows users usually have admin rights.

### Difference between Virus and Worm?

Worm replicate itself as virus, but different entities (virus attaches itself to the host).

### Is it feasible to derive Dec from End in Asymmetric, Symmetric?

No, Yes.

### What are the key part in Authentication?

Authenticators, used to verify the authenticity of the messages.

### Is Authentication Symmetric or Asymmetric?

Asymmetric, computer holding verification method can’t generate authenticator.

### How many bits MD5 produces?

128 bits.

### How many bits SHA-1/2 produces?

160 / 224 or 256

### Which division of computer security is highest/lowest in US Department of Defense?

Highest: A, Lowest: D

## Chapter 17 – Distributed System Structure

### What is FALSE for distributed systems?

Site separated for security.

### Which is not the behavior of Distributed OS?

Desktop migration used by OS to transfer GUI, etc.

### Which is server based processing?

Client responsible for GUI, server do all the work.

### FALSE statement about Token Ring?

All statements are true.

### What is FQDN address?

sau@svuca.edu

### Which routing is more adaptable to load changes?

Dynamic Routing.

### Which message switching with variable length can take different path in the network?

Packet Switching.

### Which layer of ISO is not in TCP/IP?

Session layer.

### Which behavior does NOT belong to Network OS?

Need to know which resource to look for.

## Chapter 17 – Distributed File System

### False Statement about DFS?

The client needs to know about the protocol & structure & which service to connect to on the server.

### What is wrong for memory cache?

Memory cache is MORE reliable than disk cache.

### Which one False about Write Through?

It has poor performance in READ.

### Which one is TRUE for stateless?

Each request identifies the file and position in full.

### In AFS, consistency of files is managed by whom?

By server, relying on the callback provided by the client so the server can tell client when file got change.

### What is the technique used by AFS?

Whole File Caching.

## Chapter 18 – Distributed Coordination

### Which is FALSE about Happen Before?

A->B, B->C and A does not have relationship with C.

### If a process receives a message & about to enter its CS, what should it do?

Check its timestamp & compare before decide to reply or defer.

### Which algorithm uses coordinator & receives requests from all process?

Centralized approach.

### Which locking protocol is NOT concurrency control?

Exclusive Protocol (no such thing)

### Which one favors younger process rolled back often?

Wait-Die

## Chapter 19/20 – Real-time System & Multimedia System

### Which one is life threating hard realtime system scheduling?

ABS.

### Why Virtual Mem is not good for hard Real-time system?

Translation Time.

### Which is not related to Interrupt Latency?

Use the scheduler to schedule the highest priority ISR (in fact, dispatch latency)

### Which one is NOT associate with Dispatch latency

Select the Interrupt Service Routine. (this is interrupt Routine)

### Which statement is FALSE with Rate Monotonic?

The lower the rate, the **lower** the priority (should be higher)

### Which one is NOT the parameter for Realtime scheduling?

SHED\_NORMAL